

SA210E

Termin: 14/3 – 1/4/2011
Ort: Fortbildungszentrum für Technik und Umwelt
Vortragsraum: 201, 208
Kursleitung: Möbius, Breustedt
Technische Mitarbeit:
Kurssekretariat:
Pausen: 10.15 - 10.45 and 14.00 - 14.30 Coffee Break
12.15 - 13.15 Lunch

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Module 1: Basics

	8.30 - 9.15	9.30 - 10.15	10.45 - 11.30	11.30 - 12.15	13.15 - 14.00	14.30 - 15.15	15.15 - 16.00	16.00 - 16.45
Monday 14/3 Module 1	Opening, ENETRAP and ERPTS	Nucleonics and Radioactivity		Decay Modes	Radiation Detection, Principles - Gas Counters		Exercise: Statistics, Calibration Measurements	
		Möbius, Fischer		Möbius, Fischer	Wilhelm		Möbius	
Tuesday 15/3	Interaction of Radiation with Matter		Gamma Emission and Internal Conversion, Electronic Shell Rearrangements	Chart of Nuclides	Exercise: Attenuation of Gamma-Radiation, Square Law of Distance			Demonstration: Interaction of Neutrons, Moderation Absorption
	Geckeis		Panak	Magill	Sitter, Letsch			Möbius
Wednesday 16/3	Radiation Detection, Principles - Scintillation Counters and Semiconductors - Spectrometry		Quantities and Units		Exercise: Gamma-Spectrometry			
	Frenzel		Breustedt		Möbius, Möbius			
Thursday 17/3	Radioactive Decay and Ingrowth		Nuclear Reactions, Cross Section, n-Activation, Nuclear Fission	RP and Safety Instructions	Radiochemical Methods, Adsorption and Scavenging - Demonstration		Exercise: Half-Life Determination, Carrier Precipitation	
	Möbius		Mayer	Möbius	Möbius, Möbius		Möbius, Möbius	
Friday 18/3	Biological Effects		Production of Artificial Radioactive Substances - Medical, Industrial Purposes, Generators		Shielding of Ionising Radiation - Seminar		Assessment and Module Evaluation	
	Weibezahn		NN (Petten)		Magill		Möbius, Breustedt	
Saturday								

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Module 2: Foundation 1

	8.30 - 9.15	9.30 - 10.15	10.45 - 11.30	11.30 - 12.15	13.15 - 14.00	14.30 - 15.15	15.15 - 16.00	16.00 - 16.45
Monday 21/3 Module 2	Foundation in Radiation Protection (ALARA), Measures Against External Radiation Exposure, Safety Culture, Ethical Considerations on the Application of Radionuclides and Radiation Protection Coeck		Measurement of Personal Dose (Beta, Gamma, Neutron)		Hand-held Measuring Devices in Radiation Protection, Functionality Control and Errors Naber	Exercise: - Dose Rate Measurements and Contamination Control - Decontamination of Materials		
			Breustedt			Möbius, Wendel		
Tuesday 22/3	Incorporation Measurements and Control Breustedt		Biokinetic Models and Behaviour		Public and Environmental Radiation Exposure Koelzer	Visit to Body and Lung Counter		Visit to Toxicologic Laboratory
			Breustedt			Breustedt		Stuhlfauth-Vonderau
Wednesday 23/3	Regulatory Context: International Legislation in Radiation Protection (ICRP, IAEA, EC-Directives, National Regulations), <u>Recommendation and Guidelines</u>		Precautionary Measures for Occupational Exposed Personnel	Decontamination of Personal	Design Issues, Radionuclide Laboratory and Equipment (Hot Cells, Glove Boxes, Work Places) Pimpl	Nuclear Emergency Preparedness and Response, Counter Measures in Case of Accidents Gustmann	Visit to Nuclear Emergency Response Association Team, Personal Protective Equipment Gustmann, Prüssmann	
	Schmitt-Hannig		List	List				
Thursday 24/3	Radiation Protection Safety and Technology: RP Planning, RP Organisation		Storage and Security of radioactive Materials Bickel	Radiation Exposure in the Environment, Radioecology	Determination of Natural Radionuclides by Liquid Scintillation Möbius	Exercise: Liquid Scintillation Spectrometry, Determination of Radon and Radium Möbius, Möbius		Seminar: Dose Calculation for NORM Articles
	Petrick			Pimpl				Liebe, Möbius
Friday 25/3	Waste Management	Optional: Contractors Personnel in Nuclear Installations, Radiation Certificates	Optional: The German Atomic Energy Act (AtG) and the Radiation Protection Ordinance (StrlSchV), Status, Tasks and Duties of the Radiation Protection Expert/Officer Tachlinski		Assessment and Module Evaluation			
	Graf	Bickel						
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Module 3: Foundation 2**Module 6: Non-nuclear, Research, Oil and Gaz**

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Monday 28/3 Module 3	Packing and Transport <ul style="list-style-type: none">- Regulations, Responsibilities, Types of Packages, Transport Indices, Signalisation and Labelling- Lessons Learnt from Accidents		Case Study: Preparation for Radioactive Transport, Classification, Packing, Signalisation and Documentation, Shipping Documents		Release of Materials from Controlled Areas, Clearance	Exercise: Release Measurements	Exercise: Detection and Securing of Orphan Sources	
Tuesday 29/3	Emergency Planning and Procedures Action and Behaviour in Case of Incidents and Accidents		Medical Treatment in Case of Increased Radiation Exposure		Visit to Decontamination Facility for Personal	Principles, Strategies and Organisation for Decommissioning, RP Planning with Case Study, Techniques for Disassembling, Dismantling and Safe Handling		
Wednesday 30/3 Module 3 / 6	Principles of Waste Management <ul style="list-style-type: none">- Waste Streams, Waste Classifications, Strategies for Waste Conditioning, Waste Preparation and Collection, Waste Minimisation		Communication of Nuclear Issues to the Public and Media With Exercise		- Possibility to Visit Installations under Radiation Protection Aspects at the Karlsruhe Institute of Technology <ul style="list-style-type: none">- Decontamination Facilities (HDB)- Safeguards and Radiochemistry Laboratories- Accelerator			Assessment, Wrap-up and Evaluation of Core Modules
Thursday 31/3	Irradiators, Generators, Accelerators, Gauges <ul style="list-style-type: none">- Technical Principles, RP Adapted to and Regulatory Controls		Gammagraphy and X-ray Generators		Case Studies	NORM in the Oil and Gaz Industry <ul style="list-style-type: none">- Origination and Quantities		Safe Handling of Scales and Sludges, Waste Management
Friday 1/4	Management of Unsealed Sources		Ventilation and Air Filtration	Prevention for Contamination (Persons and Surfaces)	Lessons Learnt from Radiological Accidents (Goiania etc.)		Assessment and Wrap-up	